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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/773,967

02/06/2004

Sergei Kolomeitsev

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7346

34232 7590 10/25/2005

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EXAMINER

PRESTON, ERIK D

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 10/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/773,967

Applicant(s)

KOLOMEITSEV ET AL.

Examiner

Erik D. Preston

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) 25-30 and 32-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 and 31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>06/16/2005</u> | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Claims 1-24 & 31 in the reply filed on 10/03/2005 is acknowledged.

Claims 25-30 & 32-37 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Group II, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 10/03/2005.

Claim Objections

Claim 22 is objected to because of the following informalities: In the last line of the claim, the phrase "...the circular rim..." lacks proper antecedent basis and, for examination purposes, will be interpreted as saying "...the outer rim..." Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1,2,4-8,22-24 & 31 are rejected under 35 U.S.C. 102(e) as being anticipated by Vollmer (US 6879079).

With respect to claim 1, Vollmer teaches a stator for an electric motor (as seen in Fig. 1), comprising: A radial array of $2N$ teeth ($N = 3$); N coils, one wound around each even tooth; and no coil wound around any odd tooth.

With respect to claim 2, Vollmer teaches a stator core for an electric motor, comprising: A first group of stator teeth (Fig. 1, #7), each acting as a magnetic core for a single coil (Fig. 1, #3) wound around it; and carrying substantially all of the magnetic flux of the coil wound around it (which it inherently does); and a second group of stator teeth having no coils wound around them (Fig. 1, #8).

With respect to claim 4, Vollmer teaches a stator for an electric motor, comprising: A radially array of stator teeth, separated by stator slots; and phase coils encircling at least some stator teeth, wherein no slot contains coils from more than one phase (as seen in Fig. 1; Col. 2, Lines 1-15).

With respect to claim 5, Vollmer teaches the stator of claim 4, wherein the radial array of stator teeth comprises at least two teeth.

With respect to claim 6, Vollmer teaches an apparatus comprising: A stator for an electric motor, comprising coil slots; and in any slot, no coils from more than a single phase.

With respect to claim 7, Vollmer teaches an apparatus comprising: A stator for an electric motor, comprising coil slots; a rotor (Abstract); coils in respective slots, wherein all currents in any slot are in-phase.

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With respect to claim 8, Vollmer teaches the apparatus of claim 7, wherein no currents in any slot have different phases (each slot only contains one current of only one phase).

With respect to claim 22, Vollmer teaches a stator for an electric motor comprising: An outer rim (as seen in Fig. 1); stator teeth extending radially inward from the rim; breaks in the rim (as Fig. 1, #11), which define the stator teeth into two groups wherein: In one group, each tooth has a radially outward end over which a stator coil can be inserted; in the second group each tooth has a radially outward end connected to a segment of the outer rim.

With respect to claim 23, Vollmer teaches the stator of claim 22, further comprising coils around teeth in the first group; and no coils around any teeth in the second group.

With respect to claim 24, Vollmer teaches the stator of claim 22, wherein every tooth bears a pole face on its radially inward end (as seen in Fig. 1).

With respect to claim 31, Vollmer teaches the apparatus of claim 1, wherein the coils provide multiple phases.

Claim 3 is rejected under 35 U.S.C. 102(b) as being anticipated by Caywood (US 3514650). Caywood teaches a stator for an electrical motor, comprising: A first group of stator teeth each acting as a magnetic core for a single coil wound around it; and carrying substantially all of the magnetic flux of the coil wound around it; a second group of stator teeth, having no coils wound around them (as seen in Fig. 2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanazawa et al. (US 5431141) in view of Vollmer (US 6879079). Kanazawa teaches a motor (Fig. 1, #105) that is powered by a motor vehicle, but it does not teach the apparatus of claims 9-11. However, Vollmer teaches the apparatus of claims 9-11. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the stator of Kanazawa et al. in view of the stator as taught by Vollmer because it produces a magnetic field profile from which the harmonics have virtually been filtered out which leads to a reduction in cost (Vollmer, Col. 2, Lines 1-15).

Claims 12-17 & 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vollmer (US 6879079) in view of Greer (US 2517105).

With respect to claim 12, Vollmer teaches a stator for an electric motor comprising: an outer rim; stator teeth extending radially inward from the rim; breaks in the stator, which allow individual stator teeth to be removed from the stator; and a coil to be mounted onto selected stator teeth, but it does not teach that said coil is specifically a pre-formed coil. However, Greer teaches pre-formed stator coils (Col. 1, Lines 1-5). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the coil of Vollmer in view of the pre-formed coil as taught by Greer because it

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has better heat transmission and radiation characteristics than conventional motor coils (Greer, Col. 4, Lines 1-8).

With respect to claim 13, Vollmer teaches a stator for an electric motor comprising: A radial array of stator teeth with a stator slot present between adjacent pairs of teeth; a rim surrounding the teeth; and breaks in the rim which allow individual teeth to be separated from the stator and coils placed on each of the selected individual teeth, but it does not teach a pre-formed coil being inserted onto said selected individual teeth. However, Greer teaches pre-formed stator coils (Col. 1, Lines 1-5). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the coil of Vollmer in view of the pre-formed coil as taught by Greer because it has better heat transmission and radiation characteristics than conventional motor coils (Greer, Col. 4, Lines 1-8), and to insert the pre-formed coils of Greer over the outer ends of said selected individual teeth since it would require no modification of the stator of Vollmer to do so.

With respect to claim 14, Vollmer in view of Greer teaches the stator of claim 13, and Greer teaches that the structural configuration of the removed stator teeth does not require deformation of the pre-formed coil during mounting (Greer does not mention any deformation of the teeth during mounting).

With respect to claim 15, Vollmer in view of Greer teaches the stator of claim 13, wherein the structural configuration of the removed stator teeth does not require deformation of the pre-formed coil during insertion (Greer does not mention any deformation of the teeth during insertion).

With respect to claim 16, Vollmer teaches a collection of parts for constructing a stator for an electric motor, comprising: A plurality of coils; a first set of stator teeth having radially outer ends which fit into the coils; and a second set of stator teeth, each having a segmented rim mounted thereon, but it does not teach that said coils are pre-formed. However, Greer teaches pre-formed stator coils (Col. 1, Lines 1-5). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the coil of Vollmer in view of the pre-formed coil as taught by Greer because it has better heat transmission and radiation characteristics than conventional motor coils (Greer, Col. 4, Lines 1-8).

With respect to claim 17, Vollmer in view of Greer teaches the collection of claim 16, and Vollmer teaches that a radial array of stator teeth connected to an outer rim is generated when the first set of stator teeth is positioned in odd-numbered sectors of a circle, and the second set of stator teeth is positioned in even-numbered sectors of the circle.

With respect to claim 19, Vollmer in view of Greer teaches the collection of claim 17, and Vollmer teaches that the segments of the rim, together with radially outer segments of stator teeth in the first set, collectively form circular periphery of the stator.

With respect to claim 20, Vollmer teaches a stator for an electric motor, comprising: A radial array of stator teeth, extending inwardly from a circumferential rim; breaks in the rim which allow individual teeth to be separated from the stator, and a coil to be placed onto selected individual teeth, but it does not teach that said coils are pre-formed. However, Greer teaches pre-formed stator coils (Col. 1, Lines 1-5). It would

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have been obvious to one of ordinary skill in the art at the time of the invention to modify the coil of Vollmer in view of the pre-formed coil as taught by Greer because it has better heat transmission and radiation characteristics than conventional motor coils (Greer, Col. 4, Lines 1-8).

With respect to claim 21, Vollmer in view of Greer teaches the stator of claim 20, and Vollmer teaches that parts of the rim are connected to some teeth when removed, preventing insertion of pre-formed coils onto such teeth.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schunk et al. (US 6812612) in view of Greer (US 2517105). Schunk teaches a collection of parts for constructing a stator for an electric motor, comprising: A plurality of coils (Fig. 1, #2); a first set of stator teeth (Fig. 4, #4) having radially outer ends which fit into the coils; and a second set of stator teeth (Fig. 4, #5), each having a segmented rim mounted thereon; a radial array of stator teeth connected to an outer rim is generated when the first set of stator teeth is positioned in odd-numbered sectors of a circle, and the second set of stator teeth is positioned in even-numbered sectors of the circle wherein the segments of the rim collectively form a circular periphery of the stator, but it does not teach that said coils are pre-formed. However, Greer teaches pre-formed stator coils (Col. 1, Lines 1-5). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the coils of Schunk in view of the pre-formed coil as taught by Greer because it has better heat transmission and radiation characteristics than conventional motor coils (Greer, Col. 4, Lines 1-8).

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Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 2903610, US 4100473, US 4812695, US 5095237, US 5107159, US 5418416, US 5541463, US 5801463, US 5909072, US 6107718 & US 2002/0163275

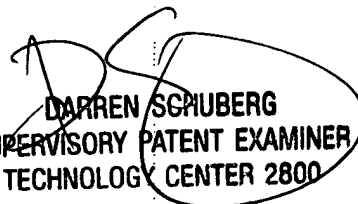
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erik D. Preston whose telephone number is 571-272-8393. The examiner can normally be reached on Monday through Friday 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



10/17/2005



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